

# Exploring Students Nurses' Preparedness and Readiness for to Care for Critically ILL Patients and Implication for Patient's Safety

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## Abstract

**Background:** Unsafe nursing care provided to critically ill patients by unqualified nurses can cost a patient's life. When nursing care falls short of standards because nurses are lacking knowledge and or practical skills, nursing education programs shoulder much of the responsibility.

**Aims:** aims of the current study were to explore the students' nurses (senior students) preparedness and readiness to care for critically ill patients, determine the students' nurses' perceptions toward their preparedness and readiness to practice as critical care nurse and, compare between the students' nurses clinical knowledge and their self – perceptions.

**Method:** To fulfill the aims of the study, senior students in the Faculty of Nursing at the University of Alexandria were recruited during the last month of the internship year. Three tools were used to collect the data. **Tool one** "Generation of Core Competencies" that was aimed at identifying crucial competencies that are required for new students' nurses to provide competent and safe patient care. **Tool two** "Exploring the students' nurses' preparedness and readiness to care for critically ill patients" that was aimed to exploring the clinical knowledge of the students' nurses (objective tool) and **Tool three** "Casey-Fink Readiness for Practice Survey (CFRPS)" that was aimed to determining the students' nurses' perceptions toward their preparedness and readiness to practice as critical care nurse (subjective tool).

**Results:** Results of the current study revealed that the median knowledge score was generally low (MD: 14) denoting insufficient students nurses' knowledge. The average number of correctly answered questions by participants was only 14 out of 50 (mean, SD 14.12, 4.03). However, the nurses' perceptions or attitudes toward their preparedness and readiness to practice as a critical care nurse were generally positive and high. About 50% of nurses answered at least 11 questions as "strongly agree" out of 15 questions of perception.

**Conclusions:** Although the study was conducted at the end of the internship year as the clinical internship experience improved the nurses' knowledge and perceptions of readiness for practice, there was a contradiction between the student nurses' knowledge (low) and perceptions of their readiness (high).

**Keywords:** *Students' Nurses, Preparedness & Readiness, Critically Ill Patient's safety.*

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## Introduction

Critical care units, which can also be referred to as intensive care, provide lifesaving care for critically ill patients and are associated with life-threatening risks. Moreover, the complexity of care within these units requires that the nurses exhibit a trans-disciplinary level of competency to improve patient safety. The

increasing mortality rate among critically ill patients elevates the worries about new graduates' critical care nurses' competencies.<sup>(1,2)</sup> According to the American Association of Critical-Care Nurses (AACN), to promote the critically ill patient's safety, new graduate nurses must be equipped with specialized knowledge & skills and can think and work quickly in stressful conditions and stay alert after many hours of intensive work (AACN. 2019).<sup>(3)</sup> It is the responsibility of the nursing education programs to produce graduates of nurses capable of providing safe, efficient patient care.<sup>(4,5)</sup>

New graduate nurses' preparedness and readiness to practice independently have been an area of debate. The breadth and depth of nursing knowledge and technical skill necessary for critical care practice continue to rapidly increase yet the time available and clinical areas for the training of trainees have not. Limitations in the duty hours and areas for the training of trainees have reduced clinical exposure and make the students spending more time on their training in the clinical labs and away from the real environment. This challenging area makes the nursing education sector struggled to find solutions to the so-called 'theory-practice gap', leading to a deficiency in graduates' readiness to practice.<sup>(6-8)</sup>

Concerns regarding the adequacy of one's knowledge, making mistakes, not being able to keep up, and claiming one's role on the health care team as a professional nurse can spark difficult emotions and endangering the patient's life as a result.<sup>(9 - 11)</sup> Becoming a critical care nurse means making the transition from being a nurse student to being a professional nurse and a member of a multidisciplinary health team. Nowadays, several questions are raised regarding the preparedness and readiness of the new graduate nurses, accompanied by claims from healthcare workplaces that graduates do not receive adequate educational preparation before they enter the workplace.<sup>(12 - 14)</sup>

### Research Questions:

1. Do the students' nurses have adequate clinical knowledge to provide a competent and safe nursing care for critically ill patients?
2. What are students nurses' perceptions regarding their preparedness and readiness to practice as a critical care nurse?
3. Is there any difference between the result of students' nurses' clinical knowledge and their self-perceptions?

## Materials and Method

**Study Design:** a descriptive, cross-sectional study was recruited to conduct the current study.

**Sample:** Senior baccalaureate nursing students (BSNs), Faculty of Nursing, University of Alexandria, who agreed to participate in the study, were recruited during the final month of their internship year.

**Tools: Tool 1 : "Generation of Core Competencies"** this tool was developed by the researcher to elicit the opinions of the expert panel regarding the core competencies. The expert panel consists of clinical educators involved in the provision of clinical education to students enrolled in critical care nursing courses during the preceding two years (2017/18) and the preceptors involved in the provision of clinical training and supervision of the students during the internships year 2018/19. This tool consists of two sections. Section one includes short demographic information of the expert panel such as gender, age, and years of experience. The second section was focused on the generation of core competencies by asking one open-ended question. Here, a panel was asked to describe what they believed were the core competencies that indicate that students are adequately prepared to care for critically ill patients safely and independently. The responses received from the panel were subjected to a thematic framework analysis by the researcher. Five themes or domains were identified by the panel considered to be important. These domains include:

- Domain One: Airway & Breathing Management
- Domain Two: Perfusion & Hemodynamic Monitoring & Management
- Domain Three: Nutrition & GIT Management
- Domain Four: Calculation of Fluids and Medications
- Domain Five: Communication, Decision Making, and Leadership Skills

**Tool 2: "Exploring the Students Nurses' Preparedness and Readiness to Care for Critically Ill Patients"** A self-reported questionnaire using a paper-pencil was developed by the researcher. It was used to assessing the clinical knowledge of the students' nurses (objective). This tool consists of two parts.

**Part One "Sociodemographic and Clinical Data of the Participants"** such as age, sex, marital status, level of entry into the bachelor's program, have you

worked during the education period, and the students were asked about their commitment in the attendance of lectures and clinical training. **Part Two:** this part was considered as an outcome of the tool one, core competencies. Each competency or domain was assessed by a group of Multiple Choice Questions with a total of 50 questions [Airway & breathing management (15Qs), Perfusion & hemodynamic monitoring & management (15Qs.), Nutrition & GIT management (12Qs.), communication, decision making and leadership skills (6Qs.) & Calculation of fluids and medications (2Qs.)]. Each multiple-choice question has 4 response alternatives or options (the correct answer/response and 3 distractors or alternatives that are not the answer). This part of the Questionnaire was pre-tested for its face and content validity by distributing it to five experts in the field of nursing education. Internal reliability was done by a group of interns (n = 10) by using Cronbach's alpha ( $\alpha=0.84$ ).

**Tool 3: "Casey-Fink Readiness for Practice Survey (CFRPS)".** It was developed by Casey et al (2011)<sup>(15)</sup> with a total of 20 items and it was modified by the researcher to make it shorter and summarized. This questionnaire was used to identifying the students' nurses' perceptions towards their preparedness and readiness to care for critically ill patients. This questionnaire comprises five themes with a total of fifteen items:

- Patient care (7 items),
- Communication (2 items),
- Decision making (3 items),
- Leadership (1 item),and
- Other items – satisfaction & readiness (2 items)

A five -Likert scale (1=strongly disagree, 2=disagree, 3=unsure, 4 agree, 5=strongly agree) was used to elicit the student's nurses' perceptions. The new version of the questionnaire was evaluated for face and content validity using expert nurse educators and nurse preceptors. The overall reliability for all themes was tested by Cronbach's Alpha ( $\alpha= 0.88$ )

**Ethical Considerations:** Approval to conduct the study was obtained from an ethical committee in the Faculty of Nursing at the University of Alexandria. Permission for data collection was obtained from the hospitals authorities. Written informed consent was obtained from the students' nurses and their preceptors.

Participants were shared in the study voluntarily and based on anonymity.

## Results

All statistical tests were performed using IBM SPSS statistics program version 21. Quantitative data were described by mean and median as measures of central tendency & Standard deviation, minimum, maximum, and inter-quartile range as measures of dispersion, while categorical variables were summarized by frequency and percent. Questions that were correctly answered by participants were summed to calculate the total knowledge score as well as the knowledge score per each domain. To analyze the perception scale (5– Likert scale ranged from strongly disagree=1 to strongly agree=5). All responses have summed all items or statements per each participant and calculated the total perception score. A significant association between the categorical variables was done by using of Chi-square test. Mann-Whitney test was used to compare median quantitative knowledge and perception scores between different dichotomous variables.

**Sociodemographic Data of the Expert Panel:** A total of 15 experts participated in the generation of core competencies. One-third of the sample was preceptors (33.3%) and two-third were nursing educators (66.7%). The gender of the participants was 3 males (20%) and 12 females (80%). Most of the panel has more than 10 years of experience (80%).

**Exploring the Students' Nurses' Preparedness and Readiness to Care for Critically Ill Patients:** Tools 2 & 3 were distributed to a total of 210 students' nurses during the orientation day of the last month in the internship year. Only 183 (87.1%) of students' nurses agreed to participate in the study.

**Table (1): Sociodemographic & Clinical Characteristics of the Participants**

Sociodemographic & Clinical Characteristics (n = 183)	Frequency	Percent (%)
<b>Sex:</b>		
Male	48	(26.2)
Female	135	(73.8)
<b>Marital Status:</b>		
Single	119	(65.1)
Married	64	(34.9)

Sociodemographic & Clinical Characteristics (n = 183)	Frequency	Percent (%)
<b>Level of entry into the bachelor’s program:</b>		
Secondary school	149	(81.4)
Bridge diploma degree	34	(18.6)
<b>Have you worked during the education?</b>		
No	69	(37.7)
Yes	114	(62.3)
<b>Were you regularly attended the lectures?</b>		
No	36	(19.7)
Yes	147	(80.3)
<b>Were you regularly attended the clinical (Lab/Hospital)?</b>		
No	32	(17.5)
Yes	151	(82.5)
<b>Age</b>		
Mean (SD)	24.6(1.1)	
Median (IQR)	(23-25)	
Min-Max	(22-27)	

Table (1) shows the sociodemographic and clinical characteristics of the participants. The mean age of the students was 24.6 years. Most of the sample was female (73.8%), single (65.1 %), and admitted to the bachelor’s program after completion of secondary school (81.4%). Most of the students (62.3%) had worked during enrolling in the nursing program. Also, most of them were committed to the attendance of lectures and clinical training (80.3 % & 82.5%).

Table (2) illustrates the mean and median knowledge scores per each domain as well as the total knowledge score. it shows that the median knowledge score was generally low (MD: 14) denoting insufficient knowledge with the range of total questions that were correctly answered ranged between 2 to 27 out of a total 50 questions. The average number correctly answered by participants was only 14 out of 50 (mean, SD 14.12, 4.03). About half of nurses have a total knowledge score above average (56.8%).

**Table (2): Students’ Nurses Clinical Knowledge Mean Readiness-to-Practice Scores**

Domains of Clinical Knowledge	Maximum Range of Scores	Mean Score (SD)	Median (Min-max) IQR	Above average	Below average
				Frequency (%)	
Airway & Breathing Management	15	4.68(2.22)	5(0-10) (3-6)	87(47.5)	96(52.5)
Perfusion & Hemodynamic Monitoring & Management	15	4.24(1.89)	4(0-10) (3-5)	100(54.6)	83(45.4)
Nutrition & GIT Management	12	3.07(1.68)	3(0-8) (2-4)	107(58.5)	76(41.5)
Medications & Fluids Calculation	2	.60(.63)	1(0-2) (0-1)	88(48.1)	95(51.9)
Communication, Decision Making, and Leadership Skills	6	1.5(1.05)	1(0-4) (1-2)	98(53.6)	85(46.4)
Total Knowledge Score	50	14.12(4.03)	14 (2-27) (11-16)	79(43.2)	104(56.8)

**Table (3): Students Nurses’ Perception Regarding Their Preparedness & Readiness to Practice as Critical Care Nurse**

Domains of Casey–Fink Readiness Perception Scale (CFRPS)	Max. range of scores	Mean score (SD)	Median (Min-max) IQR	Median score % (min-max) (IQR)	Below the Average	Above the Average
					Frequency (%)	
Patient Care Skills	35	25.01(4.9)	26(7-35) (22.75-28)	74.28(20-100) (65-80)	90(49.2)	93(50.8)
Communication Skills	10	7.32(1.76)	8(2-10) (6-9)	80(20-100) (60-90)	78(42.6)	105(57.4)

Domains of Casey–Fink Readiness Perception Scale (CFRPS)	Max. range of scores	Mean score (SD)	Median (Min-max) IQR	Median score % (min-max) (IQR)	Below the Average	Above the Average
					Frequency (%)	
Problem – Solving Skills	15	10.98(2.17)	11(3-15) (10-12)	73.33(20-100) (66.6-80)	66(36.1)	117(63.9)
Leadership Skills	5	3.61(.99)	4(1-5) (3-4)	80(20-100) (60-80)	74(40.4)	109(59.6)
Other Items	10	7.25(1.68)	8(2-10)	80(20-100) (70-80)	82(44.8)	101(55.2)
Total Perception Score	75	54.28(9.27)	56(15-75) (49-60)	74.66(20-100) (65.33-80)	79(43.2)	104(56.8)

Table (3) shows that the median total perception score percentage is 74.66% and it ranged between 20 to 100. Nurses’ perception or attitude was generally positive toward their readiness to care for critically ill patients. The median score was 56 denoting that 50% of answers were above this value. This denotes about 50% of nurses answered at least 11 questions as “strongly agree” out of 15 questions of perception. Also, more than half of nurses (56.8) had a total perception score greater than the average 54.28 (9.27).

**Correlations between the Variables:** Table (4) reveals that there was insignificant linear relationship existed between the total knowledge score and total perception score (p.183). There was no association between the clinical knowledge and the self-perceptions

of the students. The students had positive insights regarding their readiness for clinical practice; however, the results of their clinical knowledge did not show this confidence. This denotes that, there was a contradiction between the students’ perceptions and clinical knowledge.

**Table (4): Correlation between Students’ Nurses’ Clinical Knowledge and their Perceived Readiness for Caring for Critically Ill Patients**

	Total Perception Score
Total Knowledge Score	$r_s = .019$ P. 183

$R_s$  Spearman’s rho Correlation Coefficient

**Table (5): Correlations between Students Nurses’ Knowledge and Perceptions with Clinical Variables (Level of Entry into the Bachelor’s Program, Working during the Education Period and Regular Attendance of Lectures)**

Level of Entry into The Bachelor’s Program	Total Knowledge Score	Total Perception Score in %
	Median (Min-Max) IQR	
Secondary School	14(2-27) (11-17)	73.33(20-100) (64-80)
Bridge Diploma Degree	13(8-21) (11-15)	76(60-92) (76-79)
Sig	U=2126 P.143	U=2811 P.286

Working During the Education Period	Total Knowledge Score	Total Perception Score In %
	Median (Min-Max) IQR	
No	15(2-25) (13-17)	74.6(40-100) (63.33-80)
Yes	13(3-27) (11-16)	74.6(20-96) (68-80)
Sig	U=2891 p.003*	U=4138 p.486
Attendance of the Lectures and Clinical Training	Total Knowledge Score	Total perception score in %
	Median (min-max) IQR	
No	13(7-21) (10.25-14.75)	74.6(24-84) (63.33-80)
Yes	15(2-27) (11-17)	74.6(20-100) (64-80)
Sig	U=3427 p.006*	U=2495 p.782

Results  $\leq 0.05$  are significant, U: Mann-Whitney test

Table (5) shows there was no significant correlation between total knowledge score, total perception score, and level of entry to the bachelor program (P.143 & P.286). Moreover, there was a significant correlation between the result of the clinical knowledge and the students who did not work during the education period, students who did not work during the education period got higher grades in the clinical knowledge than those who did not. (p.003). However, there was no significant correlation between perceptions of the students who did not work or who did during the education period or not (p.286). Concerning the correlation between the knowledge and perceptions scores and the students' attendance the lectures, the Median total knowledge score was significantly higher among nurses who regularly attended the lectures (p.006) but an insignificant difference existed in the median total perception score between those who regularly attended the lectures or not (p.782).

## Discussion

The main emphases of this study were to explore the students' nurses (senior students) preparedness and readiness to care for critically ill patients, determine the students' nurses' perceptions toward their preparedness and readiness to practice as critical care nurse and, compare between the students' nurses' clinical knowledge and their self – perceptions. The result of the current study illuminated and raised the alarm for the

academia to consider and address the clinical preparation of the students because the result of the current study revealed that, the median score of clinical knowledge was generally low and or insufficient and because of this, patient's safety could be negatively impacted. A low level of students' nurses' knowledge could be related to one or more of the following three assumptions. The first assumption was the quality of the students' preparation during the undergraduate period because nurses' competencies are based on the educational content that was taught during the studying period.

The second assumption was the time and or place of the critical care course in the study plan. The critical care nursing course is located and taught during the third year in the four – year undergraduate curriculum. According to adult learning theory, as learners tend to absorb new subjects more deeply, such subjects are expected to be forgotten slower than the old subjects. <sup>(16)</sup> Based on this theory, the students are expecting to memorize and retain the courses that were taught during the fourth year more than the courses taught during the third year (critical care course). This also depends on the student's ability for remembering and retention of the knowledge and skills.

Finally, the third assumption was concerned with the misunderstanding of nursing as a profession. Students assumed that nursing as a profession depends on the

demonstration of manual skills and it is not important for a student to demonstrate knowledge. The low level of students' nurses' knowledge revealed by the current study was incongruent with the studies that had been addressed in the same area of the current research. These studies were focused on nurses' knowledge, clinical practice, communication skills, leadership, and decision making.<sup>(8 and 17-23)</sup> The problem of the low level of nurses' knowledge was raised in the 1970s and remains a concern for today.<sup>(24)</sup>

A surprising result noted in the current study was the student nurses' self-perceptions. The students had a good insight and high self-perception (confidence or trust) regarding their preparedness and readiness to care for critically ill patients. This result could be owed to two assumptions. One of them that was described by the theory of Paternalism (is a Latin word means father; an action that limits a person's or group's liberty or autonomy and is intended to promote their good).<sup>(25)</sup> During the period of undergraduate education, the students' actions and behaviors were controlled and directed by the academic staff. The academic staff thought that they know more than students so they have the power and authority to decide for them, even if these choices were against the students' will. The same scenario was repeated during the internship year by the preceptors who guided and supervised the students' performance.

By the end of the internship year, the students' nurses felt that they became more mature, free, could control, and assess their level of performance. The second way that could explain the high insight or confidence of the students' nurses; regarding their readiness was revealed by the result of the current study. The majority of the students' nurses were worked in the private hospitals during the education period and they were assigned to and worked independently with the patients, this gave them a feeling of trust, maturity, self-control, and confidence.

Positive or good perceptions of the participants in the current study were in controversy.<sup>(26, 27)</sup> They explored new nursing graduates' readiness to practice in real-life situations. Participants described their perceptions as frightening and highlighted their feelings of low self-confidence in dealing with critical situations that required problem-solving, decision-making. Insufficient or inadequate graduates' preparation and clinical exposure during academic preparation were revealed by these studies. Other studies<sup>(15 and 28-30)</sup> also explored

undergraduate nursing students' readiness to practice at the point before employment. Students' nurses who participated in these studies mentioned that they were unconfident regarding their readiness for practice.

## Conclusion

Based on the findings of the current study, it can be concluded that the students' nurses seem to trust their basic competencies and readiness to practice as a critical care nurse. However, the median knowledge score is generally low denoting insufficient knowledge. There was a significant correlation existed between the clinical knowledge and the students who did not work during the education period.

**Recommendations:** To assure the quality of care provided by the new graduate nurses to critically ill patients, and patient's safety as well, two pillars (academia or nursing education programs and workplaces or healthcare institutions) should collaborate and work together. No quality improvement in the patient will be suspected without this collaboration. The following are recommendations for both pillars.

### Recommendations for Academia:

- Revise the criteria for selecting and recruiting of new clinical instructors. Getting a high GPA is an important criterion for the qualification, but not indicates the readiness of the clinical instructor to work with the students. Ensure adequate orientation and training of the new clinical instructors before their engagement in the teaching of the students.
- Modify the nursing curriculum and move the critical care course from the third year to the fourth year to ensure adequate retention of critical care knowledge and skills.
- Collaborate, consult, share with, and highlight the needs of the workplace leaders when developing or modifying the content (competencies) of the curriculum. This could bridge the gap between theory and practice and improve the quality of care and patients' safety.
- Revise and use the student-centered teaching method that focus on the development of critical thinking, clinical reasoning, and knowledge retention such as problem-based and reflective learning. These method of leaching enhance students' learning independence and develop their critical thinking and problem-solving skills.

- Engage objective and reliable method of assessment that are compatible with the student-centered method of teaching.
- Collect the students' feedback regarding their satisfaction with the instructors, courses' content, teaching method, assessment method, and facilities.
- Collect the instructors and faculty feedback regarding their working conditions.

#### **Recommendations for workplace leaders:**

- Develop a preceptorship or mentorship program. A preceptor or a mentor is an experienced nurse who partners new graduates during their early transition phase (first month) guides, the practice and instructs them regarding their role as care providers.
- The ongoing nursing shortage and the high turnover rates of nurses have led workplace leaders to assign the critically ill patients, with their high complexity conditions, to the new graduate nurses who still need more training and more supervision and support from the experienced nurses. So, stop the calming of academia and find a solution to the problem of the nursing shortage.
- Develop partnerships and continuous collaboration with nursing programs.
- Develop and apply continuous in-service education for new graduates, especially during the first year. Topics should be focused on clinical care, communication techniques, conflict management, prioritization skills, and leadership development.

#### **Recommendation for Further Research:**

#### **Further researches should focus on the following topics:**

- Factors that influence the readiness of student nurses to practice as a registered nurse.
- Determining the students nurses' feedbacks toward the teachers, critical care course content, teaching method, and assessment method.
- Evaluation of educational strategies that are implemented to enhance critical thinking and decision making in the nursing population

**Conflict of Interests:** The author has no conflict of interest.

**Source of Funding:** the author did not receive any fund from anybody/institution (self-funding)

**Ethical Clearance:** the research was ethically approved by the ethical committee in the Faculty of Nursing, University of Alexandria.

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